REMARKS:

Claims 1-4, 6-16, 18-28, 30-34, 37-39, 41-43 and 45 are pending, of which claims 1, 13, 25, 30, 31, 37, 41 and 45 are independent claims.

Claim Rejections under 35 USC §112

Claims 1, 13, 25, 30, 31, 37, 41 and 45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner objects to the claims because the Examiner thinks that the two claim limitations contradict with each other: these limitations are "computing an index for each coefficient, the index being a function of a quantization parameter, a size of the block of coefficients, and a position of said each coefficient within the block"; and "indexing the LUT, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, wherein indexing is independent of a block size."

The index of the embodiment according to the present invention is defined by "2*(QP%6) + offset (i, j)" (see paragraphs 63 and 64 of the present specification). The offset is defined in paragraph 61, which is determined by the position (i, j) of a coefficient and dependent on the size of a block. QP%6 means a modulo (6) of the quantization parameter (QP). Therefore, the specification discloses that the index is a function of a quantization parameter, the size of a block of coefficients, and a position of said each coefficient within the block. With these parameters, then, the index "2*(QP%6) + offset (i, j)" is computed. Therefore, "computing an index" is also supported in the specification.

It was Applicant's main argument in the last response that an "index" and "indexing" are given different meanings in the claims. An "index" is computed and used for indexing the LUT. "Indexing" is an operation to locate a scaling factor in the LUT, using the index. The difference between an "index" and "indexing" may be more conveniently explained using the disclosure of the specification as follows:

(A) In the embodiment of the present invention, the index "2*(QP%6) + offset (i, j)" is computed, using the information on a quantization parameter, the size of a block of coefficients, and a position of said each coefficient within the block. The resultant index is an integer number. Let's call this integer number "Int" for the purpose of this response. Although computing the

"Int" requires information on the size of a block, the resultant "Int" is just an integer number, for instance, 1, 3, 7, or 9, and does not distinguish the sizes of a block.

(B) In the embodiment, a 1-dimensional array (V) is then indexed to find a scaling factor, using the "Int". Using the equations shown in paragraphs 63 and 64, this "indexing" operation is expressed by "V[Int]". As shown in the equations in paragraphs 63 and 64, this indexing operation "V[Int]" is common for the different block sizes. In other words, the indexing operation of the present invention does not distinguish the block sizes and is indeed independent of a block size.

Thus, Applicant respectfully submits that there is no contradiction between the claim limitations, and the claim limitations are in fact supported in the specification.

Claim Rejections under 35 USC §101

Claims 1-12 and 31-34 are rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. Applicant respectfully disagrees. The Board of Patent Appeals and Interference held that "the court also explained that transformation of data is sufficient to render a process patent-eligible if the data represents physical and tangible objects, i.e., transformation of such raw data into a particular visual depiction of a physical object on a display." *Ex Parte R. Mark Halligan and Richard Weyand*, 89 U.S.P.Q.2d 1355, 1364 (November 2008) (citing *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008)).

Claims 1-12 and 31-34 are directed to transformation of raw data into a particular visual depiction of a physical object on a display. The raw date in the present invention is "a block of coefficients representative of a block of video information which has been transformed and quantized for compression of the video information". The video information recited in the claim is visual data representing a moving physical object and not a computer created visual data (computer created visual data is not going through transformation or quantization). In the present invention, this raw data is sufficiently transformed by inverse quantization and transform ("in order to reconstruct a signal of the block video information for display of the video signal"). Thus, Applicant believes that claims 1-12 and 31-34 recite a statutory subject matter according to *Ex parte Halligan.*

Claim Rejections under 35 USC §103

Claims 1-4, 6-12 and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiegand in view of Ohki. Applicant believes that Applicant's above argument has overcome the 112 rejection and that the argument has helped the Examiner understand the difference between an "index" and "indexing" in the present invention.

First, Wiegand is silent about "computing an index for each coefficient, the index being a function of a quantization parameter, a size of the block of coefficients, and a position of said each coefficient within the block" recited in claim 1. In Wiegand, the index is a set of (k, i, j) or (QP%6, i, j) (see 14-3). Thus, the Wiegand index is based on a quantization parameter and the position of each coefficient only. Unlike the index of the present invention, the Wiegand index is not a function of the block size.

Second, Wiegand is silent about "indexing the LUT, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, wherein indexing is independent of a block size" recited in claim 1. According to 14-3, a scaling factor R is defined by "R(QP%6, i, j)". Thus, 14-3 does not include any reference to the block size. However, in Wiegand, the actual indexing operation is performed by as follows:

Mode 8x8:

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R[k][i][j] = S8x8[k] for all i,j
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Mode 8x4:

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R[k][i][j] = S8x4,4x8[k][0] for all even j
R[k][i][j] = S8x4,4x8[k][1] for all odd j
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Mode 4x8:

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R[k][i][j] = S8x4,4x8[k][0] for all even I
R[k][i][j] = S8x4,4x8[k][1] for all odd I
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Mode 4x4:

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R[k][i][j] = S4,4[k][0] for(i,j) = {(0,0),(0,2),(2,0),(2,2)},
R[k][i][j] = S4,4[k][1] for(i,j) = {(1,1),(1,3),(3,1),(3,3)},
R[k][i][j] = S4,4[k][2]  otherwise;
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Thus, in Wiegand, performing "indexing," or an indexing operation, first requires identification of the block size to go to the proper matrix (note that as explained above, our indexing operation V[Int] does not require any selection of matrix). In Wiegand, the indexing

operation is not independent of the block size. Unlike the indexing operation of the present invention, the Wiegand indexing operation is dependent on the block size.

Further, Applicant maintains that Table 14-1 in Wiegand contains three separate matrixes because as explained above, these matrixes have no relationship with each other and are separately looked up according to the block size. Table 14-1 shows these three separate matrixes side-by-side just for the convenience of readers. In this regard, Applicant would like to call the Examiner's attention to the reason for rejecting claim 8. In rejecting claim 8, the Examiner states that mode 8x8 is one-dimensional. This finding contradicts with the Examiner's basis for the rejection that table 14-1 of Wiegand discloses only one matrix. The table 14-1 shows three separate matrixes to be separately looked up, in which the matrix for mode 8x8 is an 8x1 matrix, the matrix for mode 8x4 or 4x8 is an 8x2 matrix, and the matrix for mode 4x4 is an 8x3 matrix. Matrixes having different dimensions cannot be considered one matrix. As evidence by the Examiner's reason for rejecting claim 8, the Examiner adopts different interpretations of Table 14-1 for different claims to reject the respective claims, which should not be allowed.

Since both Wiegand and Ohki fail to disclose or teach the above claim limitations, claims 1-12 and 31-34 should be allowable over Wiegand and Ohki. Although Applicant believes that the above argument has traversed the rejections of the dependent claims, Applicant hereinafter specifically argues to traverse the rejections of some of the dependent claims.

As for claim 2, the Examiner states "see equation 14-3 and table 14-1 and modes 8x8, 8x4, 4x8, 4x4, wherein in order to index the lookup table 14-1, the combination of the quantization parameter (QP) modulo 6, the block size and the position of the coefficient are required." This is another indication of the Examiner's confusion between "an index" and "indexing." Claim 2 defines the index, not indexing. Borrowing the disclosure from the present specification, the index according to the embodiment of the present invention is expressed by V[2*(QP%6) + offset (i, j)], which is, as explained above, a function of a function of a quantization parameter, the size of a block of coefficients, and a position of said each coefficient within the block. On the other hand, the index of Wiegand is expressed by R(QP%6, i, j), which does not include any reference to the block size.

As to claim 10, the Examiner states that the 8x8 transform coefficients disclosed in Ohki are nearly the same as those in the claimed invention. Applicant respectfully disagrees. The

DCT operation transforms video data in the spatial domain into data in the frequency domain. More specifically, the video data is transformed into the frequency domain consisting of eight (8) frequency components all represented by cosine curves having different frequencies as shown in Fig. 1 of Ohki. Ohki found, however, that "the elements of the matrix of the DCT transform N and the matrix of the IDCT transform N' are all irrational numbers, so that, if the above transform is to be executed accurately, a multiplication circuit having a sufficient long word length is required, and hence the circuit scale is increased on the whole" (col. 3, lines 38-43).

To simplify the calculation, Ohki adopted eight (8) frequency components all represented by straight lines, as shown in Fig. 3, instead of the curved frequency components. The transform matrixes of Ohki shown in columns 7 and 8 are derived specifically from these straight-line frequency components. The Examiner states in the Office Action that these matrixes are approximations, and it would have been obvious for one of ordinary skill in the art to change the elements of the Ohki matrix to arrive at the matrix recited in claim 10. This statement ignores the disclosure of Ohki. The elements of the Ohki matrix are derived specifically to implement the straight-line concept. "Changing the elements" as suggested by the Examiner means deviating from the straight-line concept. Applicant requests the Examiner to explain how the straight-line concept of Ohki should be modified to arrive at the matrix recited in claim 10, and the basis for so modifying the straight-line concept of Ohki.

The Examiner seems to think that the elements of the transform matrixes are approximations and thus of little significance and that the elements can be manipulated in any way into any numbers. This ignores the investments and efforts made by researchers, such as Ohki, across the world to try to develop a faster and simpler transform matrix. The elements in such a transform matrix are not the product of accident. Each element has a meaning for its development and cannot be characterized as being of little significance. In Ohki, the elements of the matrixes each have its own meaning and significance. After all, Applicant believes that there is noting in Ohki that discloses or teaches modifying its matrixes to arrive at the matrix recited in claim 10.

Claims 13-16, 18-24 and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiegand in view of Ohki and further in view of McMillan. Claims 13 and 37 recite claim

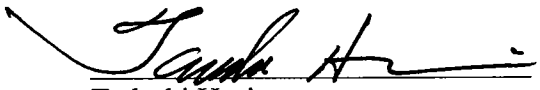
limitations similar to those recited claim 1. As explained above, independent claim 1 should be patentable over Wiegand and Ohki. In addition, McMillan is silent about the above limitations recited in claim 1. Therefore, claims 13-16, 18-24 and 37-39 should also be allowable over the cited references.

Claims 25-28 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiegand in view of Ohki and further in view of Boon. Claims 25 and 41 recite claim limitations similar to those of claim 1. In addition, Boon fails to disclose or teach the claim limitations. Therefore, claim 25-28 and 41-43 should be allowable over the cited references.

Claims 30 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiegand in view of Ohki and Boon and further in view of McMillan. Claims 30 and 45 recite claim limitations similar to those of claim 1. Therefore, claims 30 and 45 should be allowable over the cited references.

For the reasons set forth above, the pending claims are not obvious over the cited references. Reconsideration is respectfully requested.

Respectfully submitted,



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